

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (cancelled)

2. (cancelled)

3. (currently amended) ~~Differential phase detector for generating a tracking error signal; Circuit for generating a tracking error signal and a data signal~~ having an input for receiving digitized signals of at least two photodetectors, the ~~differential phase detector circuit~~ comprising: a multiplexer that time multiplexes the ~~digitized signals of the at least two photodetectors; an analog-to-digital converter that digitizes the time multiplexed signals; a demultiplexer / interpolator, coupled to the multiplexer,~~ that receives the time multiplexed ~~digital digitized~~ signals and synchronizes the samples from the time multiplexed digitized signals; ~~a differential phase detector that generates the tracking error signal from the synchronized samples of the demultiplexer/interpolator;~~ and summing means for summing the synchronized samples of the demultiplexer/interpolator to generate a data signal.

4. (cancelled)

5. (currently amended) ~~Differential phase detector Circuit~~ according to claim 3, further including means for compensating an attenuation of high signal frequencies of an interpolated signal generated by the demultiplexer/interpolator, the compensating means including an input for receiving the interpolated signal.

6. (currently amended) ~~Differential phase detector Circuit~~ according to claim 3, wherein the demultiplexer /interpolator receives a time multiplex of N signals and wherein the demultiplexer/interpolator further outputs N output channels, each of the N output channels operating at a speed equal to a speed of the time multiplexed signal divided by an integer divider of N.

7. (currently amended) ~~Differential phase detector~~ Circuit according to claim 6, wherein the demultiplexer /interpolator receives a time multiplex of four signals and wherein the demultiplexer/interpolator further outputs four output channels, each of the output channels operating at half the speed of the time multiplex.

8. (cancelled)

9. (currently amended) Method for ~~differential phase detection~~ generating a tracking error signal and a data signal in a circuit, including comprising the steps of:

- digitizing time multiplexing output signals of ~~four~~ at least two photodetectors,
- digitizing the time multiplexing multiplexed ~~the digitized~~ signals,
- synchronizing samples from the time multiplexed digitized signals with a demultiplexer / interpolator, and
- generating a tracking error signal from the digitized and synchronized samples; and
- generating a data signal by summing the synchronized samples of the demultiplexer/interpolator ~~to generate a data signal.~~

10. (currently amended) Apparatus for reading from and/or writing to optical recording media, the apparatus comprising a ~~differential phase detector~~ circuit for generating a tracking error signal and a data signal and having an input for receiving digitized signals of at least two photodetectors, wherein the ~~differential phase detector~~ circuit further includes: a multiplexer that time multiplexes the digitized signals of the at least two photodetectors; an analog-to-digital converter that digitizes the time multiplexed signals; a demultiplexer / interpolator, coupled to the multiplexer, that receives the time multiplexed ~~digital digitized~~ signals and synchronizes the samples from the time multiplexed digitized signals; a differential phase detector that generates the tracking error signal from the synchronized samples of the demultiplexer/interpolator; and

summing means for summing the synchronized samples of the demultiplexer/interpolator to generate a data signal.